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Education

October, 2002	Dr. Ing. (Ph.D.) in Computer Science, *magna cum laude* Advisor: Reinhard Wilhelm
1999–2002	Ph. D. thesis in Computer Science on the subject "*A Demand-Driven Solver for Constraint-based Control Flow Analysis*" at Universität des Saarlandes, Germany.
1989–1994	Studies of Computer Science at Universität des Saarlandes, Germany. Master thesis on the subject of "*Pointer-Analysis for Imperative Programming Languages*".

Employment

August, 2008 –	*External Lecturer* Department of Informatics Copenhagen Business School, Copenhagen, Denmark.
April, 2008 –	*Associate Professor* Department of Informatics and Mathematical Modelling Technical University of Denmark, Lyngby, Denmark.
May, 2005 – March, 2008	*Assistant Professor* Department of Informatics and Mathematical Modelling Technical University of Denmark, Lyngby, Denmark.
January, 2005 – April, 2005	*Lecturer* Donald Bren School for Information and Computer Science University of California, Irvine, U.S.A.
January, 2003 – April, 2005	*Postdoctoral Researcher* in the group of Michael Franz Donald Bren School for Information and Computer Science University of California, Irvine, U.S.A.
January, 1999 – December, 2002	*Graduate Research Assistant* Compiler Design Lab (Reinhard Wilhelm) Universität des Saarlandes, Saarbrücken, Germany.
1994–1998	*System Administrator* and *Graduate Research Assistant* International Conference and Research Center, Schloss Dagstuhl, Germany.

Honours

2008 • Nominated for *DTU Teacher of the Year Award*.

Major Research Interests

My main research interests are in the areas of *programming languages and optimizing compilers* and *modelling and analysis of systems*.
In the area of programming languages and optimizing compilers, I am interested in developing mechanisms that allow to dynamically guide the compilation process based on the state of the program being translated. The idea is to use metrics on the intermediate state of a program for guiding the compilation process. Closely related to this is my work on generating static analysers from semantics descriptions of the language being analysed.
In the area of modelling and analysis of systems I work on abstractions of real-world systems to allow application of static analysis. In this area I have recently developed an extensible formal model that can be applied to systems such as office complexes. This application of the model allows to, e.g., analyse log files of events in the modelled system to identify potential insider threats.

Teaching Experience

I have taught or teach the courses listed below. Courses marked with a $\star$ have been developed by me (as a whole $\star$ or in parts ($\star$)), courses I currently teach are marked with $\circ$.

Technical University of Denmark

- $\circ(\star)$ • "Robust Programming in .NET" (graduate course)
- $\circ(\star)$ • "Business Application Development in .NET" (graduate course)
- $\circ\star$ • "Language-based Security" (part on Proof-Carrying Code, graduate course)
- • "Program Analysis" (graduate course)
- $\circ\star$ • "Compiler Construction" (undergraduate course)
- • "Programming in C++" (undergraduate course)
- • "Computer-Science Modelling" (undergraduate course)

University of California, Irvine

- $\star$ • "*Static Analysis*" (graduate course)
- $\star$ • "*Web-Technologies*" (undergraduate course)

Universität Saarbrücken

- • "*Programming in C*" (undergraduate course)
- ($\star$) • "*Web-Standards and -Applications*" (graduate course)
- ($\star$) • "*Development of Distributed Web-based Applications*" (postgraduate program)

Industrial Courses

- ($\star$) • "*Web-Technologies and -Applications—Today and Tomorrow*" (1998-2002, German Computer Science Academy)

Administrative Experience

I am actively involved in DTU Informatics' administration as part of the IT operations committee, and have earlier been a member of the IT strategy committee.

Publications

Available from `http://www.imm.dtu.dk/~probst`.

Peer-Reviewed Journal Articles

J3 • Andreas Gal, Christian W. Probst, Michael Franz: **Java Bytecode Verification via Static Single Assignment Form**. In *ACM Transaction on Programming Languages and Systems*, 30(4):1–21, 2008.

J2 • Vasanth Venkatachalam, Christian W. Probst, Michael Franz: **A New Performance Prediction Model And Its Application To Dynamic Voltage Scaling**. In *International Journal of Embedded Systems*, 3(1/2):17–30, 2007.

J1 • Michael Franz, Deepak Chandra, Andreas Gal, Vivek Haldar, Christian W. Probst, Fermín Reig, Ning Wang: **A Portable Virtual Machine Target For Proof-Carrying Code**. In *Science of Computer Programming*, 57(3):275–294, 2005.

Peer-Reviewed Conference and Workshop Papers

C22 • Rocco De Nicola, Daniele Gorla, René Rydhof Hansen, Flemming Nielson, Hanne Riis Nielson, Christian W. Probst, Rosario Pugliese: **From Flow Logic to Static Type Systems in Coordination Languages**. In Proceedings of *10th International Conference on Coordination Models and Languages (COORDINATION 2008)*.

C21 • René Rydhof Hansen, Flemming Nielson, Hanne Riis Nielson, Christian W. Probst: **Static Validation of Licence Conformance Policies**. Accepted for *The First International Workshop on Advances in Policy Enforcement (APE'08)*, 2008.

C20 • Michael Franz, Andreas Gal, Christian W. Probst: **Automatic Generation of Machine Emulators: Efficient Synthesis of Robust Virtual Machines for Legacy Software Migration**. In Proceedings of *Software Engineering Conference (SE 2007)*, 2007.

C19 • Chris Bleakley, Tom Clerckx, Harald Devos, Matthias Grumer, Alex Janek, Ulrich Kremer, Christian W. Probst, Phillip Stanley-Marbell, Christian Steger, Vasanth Venkatachalam, Manuel Wendt: **Towards Interfaces for Integrated Performance and Power Analysis and Simulation**. In Proceedings of the *Dagstuhl Seminar 07041 on Power-aware Computing Systems*, 2007.

C18 • Julia L. Lawall, Christian W. Probst, Ulrik Pagh Schultz: **Issues in Holistic System Design**. In Proceedings of *The Third Workshop on Programming Languages and Operating Systems (PLOS 2006)*, 2006.

C17 • Christian W. Probst, René Rydhof Hansen, Flemming Nielson: **Where can an Insider attack?** In Proceedings of *The Fourth Workshop on Formal Aspects in Security and Trust (FAST 2006)*, 2006.

C16 • Dan Sondergaard, Christian W. Probst, René Rydhof Hansen, Christian Damgard Jensen: **Program Partitioning using dynamic Trust**. In Proceedings of *The Fourth Workshop on Formal Aspects in Security and Trust (FAST 2006)*, 2006.

C15 • Christian W. Probst, Hanne Riis Nielson, Flemming Nielson: **Enhancing Creativity by Test Diversity**. In Proceedings of the *6th International Workshop on Active Learning in Engineering Education (ALE 2006)*, 2006

C14 • René Rydhof Hansen, Christian W. Probst: **Non-Interference and Erasure Policies for Java Card Bytecode**. In Proceedings of the *6th International Workshop on Issues in the Theory of Security (WITS 2006)*, 2006.

C13 • Andreas Gal, Christian W. Probst, Michael Franz: **HotPathVM: An Effective JIT for Resource-constrained Devices**. In Proceedings of the *International Conference on Virtual Execution Environments (VEE 2006)*, 2006.

C12 • René Rydhof Hansen, Christian W. Probst, Flemming Nielson: **Sandboxing in myKlaim**. In Proceedings of *The First International Conference on Availability, Reliability and Security (ARES 2006)*, 2006.

C11 • René Rydhof Hansen, Christian W. Probst: **Secure Dynamic Program Repartitioning**. In Proceedings of the *Nordic Workshop on Secure IT Systems (NordSec 2005)*, 2005.

C10 • Andreas Gal, Christian W. Probst, Michael Franz: **Average Case vs. Worst Case-Margins of Safety in System Design**. In Proceedings of the *New Security Paradigms Workshop (NSPW 2005)*, 2005.

C9 • Vasanth Venkatachalam, Christian W. Probst, Michael Franz: **A Multilevel Introspective Dynamic Optimization System For Holistic Power-Aware Computing** In Proceedings of the *Dagstuhl Seminar 05141 on Power-aware Computing Systems*, 2005.

C8 • Andreas Gal, Christian W. Probst, Michael Franz: **Structural Encoding of Static Single Assignment Form**. In Proceedings of the *4th International Workshop on Compiler Optimization Meets Compiler Verification (COCV 2005)*, 2005.

C7 • Andreas Gal, Christian W. Probst, Michael Franz: **Integrated Java Bytecode Verification**. In Proceedings of the *First International Workshop on Abstract Interpretation of Object Oriented Languages (AIOOL 2005)*, 2005.

Publications (continued)

C6 • Andreas Gal, Christian W. Probst, Michael Franz: **Executing Legacy Applications on a Java Operating System**. In Proceedings of the *2004 ECOOP Workshop on Programming Languages and Operating Systems (PLOS 2004)*, 2004.

C5 • Christian W. Probst, Andreas Gal, Michael Franz: **Code Generating Routers: A Network-Centric Approach to Mobile Code**. In Proceedings of the *18th Annual IEEE Workshop on Computer Communications*, 2003.

C4 • Christian W. Probst: **Modular Control Flow Analysis for Libraries**. In Proceedings of the *9th Static Analysis Symposium (SAS 2002)*, Lecture Notes in Computer Science 2477, Springer 2002.

C3 • Holger Dewes, Christian W. Probst: **Static Method Call in Java**. In Proceedings of the *Java and CoSy Technology for Embedded Systems (JOSES) Workshop*, 2001.

C2 • Christian W. Probst: **Flow Sensitive Call Graph Construction For Java**. In Proceedings of the *JOSES Workshop*, 2001.

C1 • Tobias Ritzau, Marcel Beemster, Christian W. Probst, Florian Liekweg: **JoC - the JOSES Compiler**. In Proceedings of the *Java for Embedded Systems Workshop*, 2000.

Invited Contributions

I1 • Christian W. Probst, René Rydhof Hansen: **An Extensible Analysable System Model**. To appear in *Information Security Technical Report*, Elsevier.

Special Issues and Proceedings

S4 • Luca Benini, Naehyuck Chang, Ulrich Kremer, Christian W. Probst: Proceedings of the *Dagstuhl Seminar 07041 on Power-aware Computing Systems*, 2007.

S3 • Luca Benini, Ulrich Kremer, Christian W. Probst, Peter Schelkens: Special issue on *Power-aware Computing Systems* of the *International Journal of Embedded Systems*, Inderscience Publishers, 2007.

S2 • Christian W. Probst, Andreas Gal, Robert Grimm, Olaf Spinczyk: Proceedings of the 3rd Workshop on *Programming Languages and Operating Systems—Linguistic Support for Modern Operating Systems*, 2006.

S1 • Luca Benini, Ulrich Kremer, Christian W. Probst, Peter Schelkens: Proceedings of the *Dagstuhl Seminar 05141 on Power-aware Computing Systems*, 2005.

Technical Reports

TR8 • Andreas Gal, Christian W. Probst, Michael Franz: **Proofing: Efficient SSA-based Java Verification**. Technical Report No. 04-10, *University of California, Irvine, School of Information and Computer Science*, April 2004.

TR7 • Andreas Gal, Christian W. Probst, Michael Franz: **Complexity-Based Denial-of-Service Attacks on Mobile-Code Systems**. Technical Report No. 04-09, *University of California, Irvine, School of Information and Computer Science*, April 2004.

TR6 • Vasanth Venkatachalam, Christian W. Probst, Michael Franz: **A Multilevel Introspective Dynamic Optimization System For Holistic Power Aware Computing**. Technical Report No. 04-08, *University of California, Irvine, School of Information and Computer Science*, April 2004.

TR5 • Andreas Gal, Christian W. Probst, Michael Franz: **Static Closure of Java Dynamic Class Loading**. Technical Report No. 03-32, *University of California, Irvine, School of Information and Computer Science*, September 2003.

TR4 • Vivek Haldar, Christian W. Probst, Vasanth Venkatachalam, Michael Franz: **Virtual Machine Driven Dynamic Voltage Scaling**. Technical Report No. 03-21, *University of California, Irvine, School of Information and Computer Science*, October 2003.

TR3 • Vasanth Venkatachalam, Lei Wang, Andreas Gal, Christian W. Probst, Michael Franz: **ProxyVM: A Network-based Compilation Infrastructure for Resource-Constrained Devices**. Technical Report No. 03-13, *University of California, Irvine, School of Information and Computer Science*, March 2003.

TR2 • Christian W. Probst: **Static Method Invocation – An Overview**. Technical Report No. 8601, *The JOSES Consortium*, 1999.

TR1 • Christian W. Probst: **Control Flow Analysis – An Overview**. Technical Report No. 8602, *The JOSES Consortium*, 1999.

Publications (continued)

Theses

T2 • Christian W. Probst: **A Demand Driven Solver for Constraint-Based Control Flow Analysis**. Ph.D. Thesis, *Universität des Saarlandes*, published by COD Verlag, Saarbrücken, ISBN 3-9807096-0-4, 2002.

T1 • Christian W. Probst: **Zeigeranalyse für imperative Programmiersprachen**. Masters Thesis, *Universität des Saarlandes*, 1995.

Projects and Grants

2007— • I participate in the project *Security for the Citizens* funded by the Danish Strategic Research Council.
• I collaborate with the projects *Software Engineering for Service-Oriented Overlay Computers (SENSORIA)* funded by the European Community.

2003—2005 • I participated in several NSF and DARPA projects in Michael Franz's group as the local project coordinator.

1999—2002 • I participated in the project *Java Technologies for Embedded Systems (JOSES)* funded by the European Community as the local project coordinator.

Additional Education

2008 • Course on *Working with Groups in Teaching*, Technical University of Denmark.
• Course on *CDIO Engineering Education*, Technical University of Denmark.

2007 • Course on *Effective Research Grant Applications*, Technical University of Denmark.

2006 • Course on *Education in University Teaching*, Learning Lab, Technical University of Denmark.
• Course on *Teaching Portfolios*, Learning Lab, Technical University of Denmark.

2004 • Teaching Colloquium *Evaluating Student Learning: Part I, The Course Level*, University of California, Irvine.
• Successful participation in the *Research Administration Management Program*, University of California, Irvine, covering proposal and budget preparation, administration of research grants, intellectual property protection, and human subject protection.

Service to the Professional Community and International Visibility

Memberships

- In 2007 I have been invited as observer of the IFIP working group *WG*2.4 *"Software Implementation Technology"*.
- I am a member of the *Gesellschaft für Informatik* and the *Association for Computing Machinery*.

Service to the Professional Community – Ongoing

- Member of the DTU/IMM committees on *IT operations* and *Laboratories*.
- IMM contact for a collaboration with the research park *SCION DTU*
- General Chair of the *New Security Paradigms Workshop (NSPW 2009)*, Local Chair and Program Committee Co-chair of *The 13th Nordic Workshop on Secure IT Systems (NordSec 2008)*.
- Serve on the program committee for the *4th International Workshop on Systematic Approaches to Digital Forensic Engineering (SADFE 2009)*.

Service to the Professional Community – Past

- Co-chair of the *New Security Paradigms Workshop (NSPW 2008)*.
- Initiator and co-organiser of the 2008 Dagstuhl Seminar 08302 on *Countering the Insider Threat*.
- Member of the DTU/IMM committee on *IT strategy*.
- Member of the thesis committees of Vasanth Venkatachalam, Ph.D. student at the University of California, Irvine, and of Ning Wang, Ph.D. student at the University of California, Irvine.
- Program Co-chair of the Power-aware Computing track at the third *International Conference on Embedded Software and Systems* (ICESS 2007) and *The 13th Nordic Workshop on Secure IT Systems (NordSec 2008)*, and Program Chair of the 2005 ECOOP workshop on *Programming Languages and Operating Systems*.
- General Chair of the ASPLOS 2006 workshop on *Programming Languages and Operating Systems*.
- Local Chair of the 2006 *New Security Paradigms Workshop* and the 2007 *Static Analysis Symposium*.

Service to the Professional Community and International Visibility (continued)

- Served on the program committees for the *International Conference on Virtual Execution Environments (VEE 2006, 2008)*, the *New Security Paradigms Workshop (NSPW 2006, 2007, 2008)*, the *International Conference on Principles and Practices of Programming in Java (PPPJ 2006, 2007)*, and *The 13th Nordic Workshop on Secure IT Systems (NordSec 2008)*.
- Guest editor of a special issue of the *International Journal of Embedded Systems* on *Power-aware Computing Systems*.
- Co-organiser of the 2005 ECOOP workshop on *Programming Languages and Operating Systems*.
- Initiator and co-organiser of the Dagstuhl Seminars 05141 and 07041 on *Power-aware Computing Systems*.
- Served as reviewer for several conferences and journals, including the *ACM Transactions on Programming Languages and Systems* and *ACM Transactions on Embedded Systems*.
- Administered the submission servers for *2001 ACM Conference on Principles of Programming Languages (POPL)*, *2001 Conference on Compiler Construction (CC)*, and *2004 ACM SIGPLAN Workshop on Interpreters, Virtual Machines, and Emulators (IVME)*

Talks and Invited Visits

2008
- *An Extensible Analysable System Model*, Dagstuhl Seminar *Countering Insider Threats*, July 2008.
- *Lattice Constraint Graphs*, IFIP WG 2.4 meeting, Bormio, April 2008.

2007
- *Fixpoint-free Computation of Reaching Definitions*, D TU M Workshop, Kongens Lyngby, December 2007.
- *Metrics-based Phase-ordering in Optimizing Compilers*, IFIP WG 2.4 meeting, Lake Arrowhead, May 2007.
- Visit to the Department of Computer Science, University of California, Davis (Host: Matt Bishop).
- Visit to the Intelligent Systems Laboratory, Swedish Institute of Computer Science, Stockholm (Host: Babak Sadighi).
- Visit to the Department of Informatics and Mathematical Modelling, Technical University of Denmark (Hosts: Flemming Nielson and Kaj Madsen), October 2004.
- *Static Analysis for DRM*, (invited talk), Aarhus University, Denmark (Host: Mogens Nielsen), March 2007.
- *Where can an Insider attack?*, (invited talk), University of Trier, Germany (Host: Stephan Diehl), January 2007.

2006
- *Analysing Systems for Insider Threats*, (invited talk), University of California, Irvine (Host: Michael Franz), October 2006.
- *Protecting Systems against the Inside and the Outside.*, Security and Static Analysis Workshop, Technical University of Denmark, May 2006.
- *Protecting Systems against Threats*, (invited talk), Harvard University (Host: Greg Morrisett), April 2006.

2005
- *Software Security*, IT overalt, Technical University of Denmark, September 2005.
- *A Portable Virtual Machine Target for Proof-Carrying Code*, Security and Static Analysis Workshop, Chalmers University, Goteborg (Host: Andrej Sabelfeld), August 2005.
- *Metrics-based Phase-ordering in Optimizing Compilers*, (invited talk), Rutgers University, Piscataway (Host: Uli Kremer), May 2005.
- *Metrics-based Phase-ordering in Optimizing Compilers*, (invited talk), Intel Research Lab, Santa Clara (Host: Neal Glew), April 2005.

2004
- Microsoft Academic Days in Silicon Valley, Mountain View, California, October 2004.
- Visit to the Department of Informatics and Mathematical Modelling, Technical University of Denmark (Hosts: Flemming Nielson and Kaj Madsen), October 2004.
- *A Comprehensive Context for Mobile-Code Deployment*, DoD University Research Initiative Workshop Critical Infrastructure Protection and High Confidence, Adaptable Software, Annapolis, August 2004.
- *Proofing—Efficient Java Bytecode Verification*, (invited talk), Universität des Saarlandes, Germany (Host: Reinhard Wilhelm), June 2004.
- *Complexity-based Denial-of-Service Attacks*, (invited talk), Technical University Vienna, Austria (Host: Jens Knoop), June 2004.
- *Java Verification and its Complexity*, (invited lecture), University of California, Irvine (Host: Michael Franz), April 2004.

2003
- *Proofing—Efficient Bytecode Verification*, (invited lecture), University of California, Irvine (Host: Michael Franz), October 2003.
- *Studying Computer Science*, (invited talk), Peter Wust Gymnasium, Germany, October 2003.

Service to the Professional Community and International Visibility (continued)

- *Introduction to Static Analysis*, (invited lecture), University of California, Riverside (Host: Peter Fröhlich), April 2003.

2002
- *Enabling Mobile Code Execution on Small Devices*, (invited talk), Meeting of the J-Consortium, Rennes, France, September 2002.
- *A Demand-Driven Solver for Constraint-based Control Flow Analysis*, (invited talk), Linköpings Universitet, Sweden (Host: Uwe Assmann), August 2002.
- *Rapid Control Flow Analysis*, (invited talk), Fraunhofer Institute for Autonomous Mobile Systems, Schloss Birlinghoven, Germany (Host: Karl-Heinz Sylla), July 2002.

Industrial Courses

1998-2004
- *Web-Standards and -Application—Today and Tomorrow*. Together with Stephan Diehl I taught this course twice a year for the *German Computer Science Academy*, Bonn, Germany.

2000
- Postgraduate study course *Web Based Application Development* for business administration and natural science graduates. Organized by the *Center for Knowledge and Technology Transfer*, Saarbrücken, Germany.